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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

This Office Action is in response to the Request for Continued Examination filed 29 December 2005.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-17, 20, and 23-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer et al (US Patent 5,742,504), hereinafter Meyer, and Van Dort et al (US Patent 5,537,104), hereinafter Van Dort.

Regarding claim 1, Meyer teaches a machine vision system having a plurality of vision processors (VPs), each being on a respective VP computing platform (taught as the connection of a plurality of digital cameras to a machine vision system, at col. 4, lines 26-28), at least one machine vision user interface (UI) being on a machine vision UI computing platform (taught as the use of a Visual Basic toolbox presented to the user on a machine separate from the VPs for allowing the user control and selective communication with the multiple VPs in the machine vision system and for the viewing of live and still images from those VPs, at col. 4, lines 54-63, and col. 5, lines 4-5 and 15-20). Meyer also teaches a link function enabling a user to configure any second VP using the machine vision UI (taught as the camera control of col. 5, lines 57-67), and for establishing communication between a second VP in the machine vision system and the machine vision UI (taught as the linking of a camera to a Camera control, at col. 6, lines 10-16). Meyer further teaches enabling a continually updated image display on the at least one machine

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vision UI representing a current state of a second VP in the machine vision system (taught as the display of live images, at col. 6, lines 10-18).

Meyer fails to explicitly teach providing a first VP with a link function, the link function being a control function executable by the first VP, and executing the link function so as to issue instructions from the first VP to the UI to establish communication with a second VP.

Van Dort teaches a system for equipment control wherein various units are linked over a common communication channel, which the user may interact with by way of a graphic interface connected to the system. Van Dort allows for the control of audio and video equipment at col. 1, lines 21-25. Furthermore, Van Dort teaches executing a link function so as to issue instructions from a first equipment unit to a UI to establish communication with a second equipment unit (taught as the use of an actuator connected to equipment in the system, wherein a change of state in the actuator sends a signal out to other equipment units, which may change their state in a way contained by the signal, at col. 5, lines 55-64). Furthermore, the graphic interface of Van Dort may be used to generate "mark" and "link" signals between devices, as shown at col. 10, lines 24-28.

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Meyer and Van Dort before him at the time the invention was made to modify the machine vision system of Meyer to include the equipment message transmission of Van Dort in order to obtain a machine vision system wherein VPs may send link functions capable of changing the state of other VPs.

One would be motivated to make such a combination for the advantage of flexible configuration for interactions between different pieces of equipment in a system. See Van Dort, col. 1, lines 15-18.

Regarding claim 2, Van Dort teaches a control function having a plurality of parameters, including an identifier of a second VP, taught as the use of an event table enabling response to a multitude of events, and destination addresses in the table to facilitate communication between devices, at col. 6, lines 43-53.

Regarding claim 3, Meyer teaches clicking on a graphical representation of the link function displayed by the machine vision UI, taught as the manipulation of control icons, taught at col. 6, lines 13-17.

Regarding claims 4, 25, and 28, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the graphical representation of Meyer to include selectable underlined text strings. Applicant has not disclosed that underlined text strings provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the iconic representations of Meyer because both graphical representations involve "point and click" functionality, and produce the same end result.

Therefore, it would have been obvious to one of ordinary skill in the art to modify Meyer and Van Dort to obtain the invention as specified in claims 4, 25, and 28.

Regarding claim 5, Van Dort teaches a control function having a plurality of parameters, including an identifier of a second VP, taught as the use of an event table enabling response to a multitude of events, and destination addresses in the table to facilitate communication between devices, at col. 6, lines 43-53.

Regarding claims 6 and 7, Meyer teaches clicking on a graphical representation of the link function displayed by the machine vision UI to initiate execution of the link function, taught as the manipulation of control icons, taught at col. 6, lines 13-17.

Regarding claims 8 and 9, check boxes and radio buttons in user interfaces are extremely well known in the art, being present in simple java applets up to more complex applications. Therefore, it would have been obvious to one of ordinary skill in the art to include check boxes and radio buttons in a machine vision user interface.

Regarding claims 10-12, Van Dort teaches executing a link function in response to an external event, taught as the execution of a link function in response to events such as a person turning a knob, or temperature reaching a certain value, which may certainly be related in an industrial process, at col. 6, lines 41-43.

Regarding claim 13, the link function of Van Dort is inherently initiated by a programmatic decision, as parameters in the event table of col. 6, lines 37-53 must be at certain values before the link function is executed.

Regarding claim 14, Meyer teaches clicking on a graphical representation of the link function displayed by the machine vision UI to initiate execution of the link function, taught as the manipulation of control icons, taught at col. 6, lines 13-17.

Regarding claim 15, the link function of Van Dort is inherently included in a function execution sequence of a VP each time it is executed.

Regarding claim 16, the camera control function of Meyer allows for the control of one camera, and therefore must close communication with a previously controlled camera. See Meyer, col. 5, lines 57-67 and col. 6, lines 1-20.

Regarding claim 17, Meyer teaches the display of live images on a machine vision UI provided by a camera, which may be a first or second VP, taught as the display of live images, at col. 6, lines 10-18.

Regarding claim 20, Meyer teaches a machine vision system having a plurality of vision processors (VPs), each being on a respective VP computing platform (taught as the connection of a plurality of digital cameras to a machine vision system, at col. 4, lines 26-28), at least one machine vision user interface (UI) being on a machine vision UI computing platform (taught as the use of a Visual Basic toolbox presented to the user on a machine separate from the VPs for allowing the user control and selective communication with the multiple VPs in the machine vision system and for the viewing of live and still images from those VPs, at col. 4, lines 54-63, and col. 5, lines 4-5 and 15-20).

Meyer fails to explicitly teach executing the link function so as to issue instructions from the first VP to the machine vision UI to establish communication with a second VP.

Van Dort teaches a system for equipment control wherein various units are linked over a common communication channel, which the user may interact with by way of a graphic interface connected to the system. Van Dort allows for the control of audio and video equipment at col. 1, lines 21-25. Furthermore, Van Dort teaches executing a link function so as to issue instructions from a first equipment unit to a UI to establish communication with a second equipment unit

(taught as the use of an actuator connected to equipment in the system, wherein a change of state in the actuator sends a signal out to other equipment units, which may change their state in a way contained by the signal, at col. 5, lines 55-64). Furthermore, the graphic interface of Van Dort may be used to generate "mark" and "link" signals between devices, as shown at col. 10, lines 24-28.

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Meyer and Van Dort before him at the time the invention was made to modify the machine vision system of Meyer to include the equipment message transmission of Van Dort in order to obtain a machine vision system wherein VPs may send link functions capable of changing the state of other VPs.

One would be motivated to make such a combination for the advantage of flexible configuration for interactions between different pieces of equipment in a system. See Van Dort, col. 1, lines 15-18.

Regarding claims 23-24, Meyer teaches clicking on a graphical representation of the link function displayed by the machine vision UI to initiate execution of the link function, taught as the manipulation of control icons, taught at col. 6, lines 13-17.

Regarding claim 26, Meyer and Van Dort have been shown *supra* to teach a graphical representation being adapted to respond to user action so as to cause a first VP to instruct a UI to establish communication with a second VP in the machine vision system, the communication enabling a continually updated image display on the UI representing a current state of the second VP, and enabling a user to configure the second VP using the at least one UI. See Meyer, col. 4, lines 54-63, and col. 5, lines 4-5 and 15-20 and Van Dort, col. 5, lines 55-64.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the graphical representation into a spreadsheet. Applicant has not disclosed that the incorporation of the graphical representation into a spreadsheet provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the toolbar of Meyer because a toolbar and a spreadsheet with a graphical representation included would have similar column and row structure, and similar "point and click" functionality.

Therefore, it would have been obvious to one of ordinary skill in the art to modify Meyer and Van Dort to obtain the invention as specified in claim 26.

Regarding claim 27, the camera control function of Meyer allows for the control of one camera, and therefore must close communication with a previously controlled camera. See Meyer, col. 5, lines 57-67 and col. 6, lines 1-20.

Regarding claim 29, it can be seen in Figs. 4 and 6 of Meyer that the graphical representation for controlling a VP is an iconic representation.

Regarding claim 30, Regarding claim 20, Meyer teaches a machine vision system having a plurality of vision processors (VPs), each being on a respective VP computing platform (taught as the connection of a plurality of digital cameras to a machine vision system, at col. 4, lines 26-28), at least one machine vision user interface (UI) being on a machine vision UI computing platform (taught as the use of a Visual Basic toolbox presented to the user on a machine separate from the VPs for allowing the user control and selective communication with

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the multiple VPs in the machine vision system and for the viewing of live and still images from those VPs, at col. 4, lines 54-63, and col. 5, lines 4-5 and 15-20).

Meyer fails to explicitly teach executing the link function so as to issue instructions from the first VP to the machine vision UI to establish communication with a second VP.

Van Dort teaches a system for equipment control wherein various units are linked over a common communication channel, which the user may interact with by way of a graphic interface connected to the system. Van Dort allows for the control of audio and video equipment at col. 1, lines 21-25. Furthermore, Van Dort teaches executing a link function so as to issue instructions from a first equipment unit to a UI to establish communication with a second equipment unit (taught as the use of an actuator connected to equipment in the system, wherein a change of state in the actuator sends a signal out to other equipment units, which may change their state in a way contained by the signal, at col. 5, lines 55-64). Furthermore, the graphic interface of Van Dort may be used to generate "mark" and "link" signals between devices, as shown at col. 10, lines 24-28.

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Meyer and Van Dort before him at the time the invention was made to modify the machine vision system of Meyer to include the equipment message transmission of Van Dort in order to obtain a machine vision system wherein VPs may send link functions capable of changing the state of other VPs.

One would be motivated to make such a combination for the advantage of flexible configuration for interactions between different pieces of equipment in a system. See Van Dort, col. 1, lines 15-18.

Regarding claims 31-32, the connection of multiple digital camera devices with the user interface platform of Meyer is inherently a network. Furthermore, TCP/IP is a notoriously well-known protocol often implemented in network settings.

Regarding claims 33-34, Meyer teaches user action being a mouse click upon a graphical representation, taught as the use of a Visual Basic toolbox presented to the user on a machine separate from the VPs for allowing the user control and selective communication with the multiple VPs in the machine vision system and for the viewing of live and still images from those VPs, at col. 4, lines 54-63, and col. 5, lines 4-5 and 15-20. Furthermore, the use of underlined text strings as a user manipulable graphical entity (i.e. linking from one web page to another) is notoriously well known in the art, and would have been obvious to substitute in place of the graphical representation stated above.

Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer, Van Dort, and Blowers et al (US Patent 6,298,474), hereinafter Blowers.

Meyer and Van Dort have been shown *supra* to teach a graphical representation being adapted to respond to user action so as to cause a first VP on a first VP computing platform to instruct a machine vision UI on a machine vision UI computing platform to establish communication with a second VP on a second VP computing platform, the communication enabling a continually updated image display on the machine vision UI representing the current state of the second VP, and enabling a user to configure the second VP using the machine vision UI.

Meyer and Van Dort fail to explicitly teach interconnecting the plurality of VPs and the machine vision UI via a network, as well as a network supporting TCP/IP protocol.

Blowers teaches the use of a network for vision processor/user interface communication (Column 9, Lines 26-28), where the network communicates using TCP/IP protocol (Column 6, Lines 43-45).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to modify the teachings of Meyer and Van Dort with those of Blowers to obtain the machine vision system described above by Meyer and Van Dort that communicates over a network using TCP/IP network protocol.

Motivation for such a combination is given by Blowers, who states the inclusion of such configuration: "there is illustrated schematically a machine vision system generally indicated at **20** generally of the type which can be supported by the method and system of the present invention" (Column 7, Lines 40-43).

Response to Arguments

Applicant's arguments filed 29 December 2005 have been fully considered but they are not persuasive.

In response to Applicant's argument of page 10 of the remarks that Meyer fails to teach a plurality of vision processors in a machine vision system, the Examiner respectfully disagrees. Meyer teaches at col. 4, lines 10-11 what is explicitly called a "machine vision system", as seen in Fig. 2. Inspection of Fig. 2 shows a single digital camera and three analog cameras **24**, and an image digitizer/frame grabber **22** associated with the analog cameras. Meyer states at col. 4, lines 33-37 that the image digitizer/frame grabber may comprise a vision processor board, thus teaching a single vision processor associated with all three analog cameras. Further

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inspection of Fig. 2 shows that a single digital camera **24** is equivalent to the analog cameras **24** and the image digitizer/frame grabber **22**, as the feed from the digital camera need not go through the image digitizer/frame grabber or vision processor board **22**. Therefore, in the configuration described above, where there are multiple digital cameras in one machine vision system, each digital camera would have a vision processor, in order to maintain equivalence with the analog cameras **24** and image digitizer/frame grabber or vision processor board **22**, which allows for both the processing and interpretation of images as noted in the specification.

In response to Applicant's argument of pages 10-11 that the cited Visual Basic toolbox of Meyer is not a machine vision user interface on a machine vision computing platform, the Examiner refers to col. 4, lines 10-11 and the explicitly taught "machine vision system", as seen in Fig. 2. The toolbox is the interface for the machine vision system, and is therefore a machine vision user interface on a machine vision computing platform.

In response to Applicant's arguments of pages 11-12, the Examiner notes that Van Dort fails to mention machine vision systems or vision processors. The above claim rejections have been amended to reflect this fact. However, the Examiner maintains that a combination of Van Dort and Meyer would indeed produce the link function as claimed. Meyer has been shown to teach a plurality of vision processors in a machine vision system. Van Dort is relied upon for providing communication between equipment units (in this case the VPs of Meyer) by way of a user interface (the actuators of Van Dort), as shown above. Furthermore, the Examiner disagrees with Applicant's contention that the claims necessitate distinct VPs and a distinct machine vision UI, each on a respective distinct platform. The preamble of claim 1 states, "a plurality of vision processors (VPs), each VP being on a respective VP computing platform" and "at least one machine vision UI being on a machine vision UI computing platform". Nowhere in

the claims is it positively recited that there must be distinct VPs and a distinct machine vision UI, each on a respective distinct platform, as argued.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Roswell whose telephone number is (571) 272-4055. The examiner can normally be reached on 8:30 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (571) 272-4048. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Michael Roswell
3/9/2006

